Poster Presentation (PF-20)

Successful Surgical Restoration with Enterorrhaphy after Rectal Prolapse in Experimental Animals

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INTRODUCTION

Complete rectal prolapse is the protrusion of the entire thickness of the rectal wall through the anal sphincter complex. Women aged 50 and older are 6 times as likely as men to present rectal prolapse. Two thirds of women patients are multiparous and 15 to 30% report associated urinary dysfunction and vaginal prolapse.

The common marmoset (*Callithrix jacchus*) has been used increasingly in recent years for studies in bio-medical fields. The primate institute in National Center of Neurology and Psychiatry Japan was founded in 2005. Since then the number of marmoset gradually increased and 320 to 350 marmosets were housed in 2012. Averaged number of housed marmosets throughout the period is about 300. In the history of the institute, two cases of traumatic rectal prolapse, which had not been reported in marmosets, were found. This paper reports the etiology and the possible surgical treatment of marmoset rectal prolapse.

MATERIALS AND METHODS

Both animals were captive-born adult female common marmosets that were maintained according to recommendations of the Guide for the Care and Use of Laboratory Animals (US National Research Council) and were conducted in accordance with the institutional guidelines. They were housed in groups, except after the surgery, in purpose-built caging (1.0 m wide x 0.8 m deep x 1.6 m high). Animals were fed a commercial diet (CMS1, Clea Japan Inc., Tokyo, Japan) with supplements of fruits. Room temperatures were maintained at 26 to 28 °C, relative humidity 40 to 60%, fluorescent lighting from 07:00 to 19:00, and the rooms had 15 air changes per hour. All animals appeared clinically normal except diarrhea. Fecal condition was scored daily as a rate of firm (normal) stool: score 0 indicates no normal stools, and score 5 indicates that all stools are normal. The average score of control animals in year 2012 was 4.19.

RESULT AND DISCUSSION

A female marmoset Fune was born on July 27th of 2004. As a breeder she has delivered 6 offspring by 3 times before October of 2007. After the delivery of two babies on November 11th 2007, she has suffered from intermittent diarrhea and consequently the fecal score decreased (Fig. 1). On January 25th 2008 a caretaker noticed her prolapsed rectum. The peroral skins of cage-mates were stained with blood, and their cage was stained with much blood. Fune was diagnosed as being hemorrhagic shock, and was euthanized. Postmortem hemoglobin was 5.6 g/dL.

A female marmoset Takeruko was born on September 16th of 2004. As a breeder she has delivered 26 offspring by 11 times before June of 2012. She has delivered two babies on July 6th 2012. She has suffered from severe diarrhea from July 15th (Fig. 1). On August 26th, a caretaker noticed her prolapsed rectum. The peroral skins of cage-mates were stained with blood, and their cage was stained with much blood. The rectal tissue was partially cut off but physical condition was not worst and I operated enterorrhaphy after ventrotomy, pulling back of the rectum to the abdominal cavity, and resection of wounded intestine. Intestine was sutured by Albert-Lembert suture method with 4-0 absorbable suture (PDS II, Johnson & Johnson K. K., Tokyo, Japan). To prevent peritonitis, I administered antibiotics (62 mg/kgBW of Viccillin, Meiji Seika Pharma Co., Ltd, Tokyo, Japan) intraperitoneally before the abdominal closure. Follow-up 12 mg/kgBW of Viccillin and anti-inflammatory agent (Predonine, Shionogi & Co., Ltd., Osaka, Japan) were administered twice a day for seven days and three days respectively. Additionally, I orally administered a probiotics product (Biofermin R, Taisho Pharmaceutical Co., Ltd., Tokyo, Japan). Fecal score ameliorated from the 3rd week post-operatively and was stable thereafter until she was subjected to an experiment on August 25th of 2014.

In both marmosets, solitary rectal ulcer that is potentially induced by rectal prolapse [1] was

not macroscopically apparent. Both marmosets did not show urinary dysfunction and vaginal prolapse. Both marmosets had two risk factors: female and multiparous. Another risk factor of rectal prolapse in squirrel monkeys, another New World monkey species, is a giardiasis [2]. However, this is not likely in common marmosets, since 20 and 4% of a colony of marmosets younger and older than one year, respectively, were positive for giardiasis but none of animals manifested clinical signs of disease [1] and more importantly that due to an anti-parasitic program giardia has not been observed for several years in the present institute. Thus, there must be another factor, other than the giardiasis, influencing the incidence of the rectal prolapse in marmosets. A possible risk factor is the diarrhea, as both marmosets had diarrhea prior to the incidence of rectal prolapse (Fig. 1).

CONCLUSION

This report is the first in proposing the diarrhea as a potential risk factor of rectal prolapse, and in the introduction of surgical treatment, enterorrhaphy, against traumatic rectal prolapse in marmosets.

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